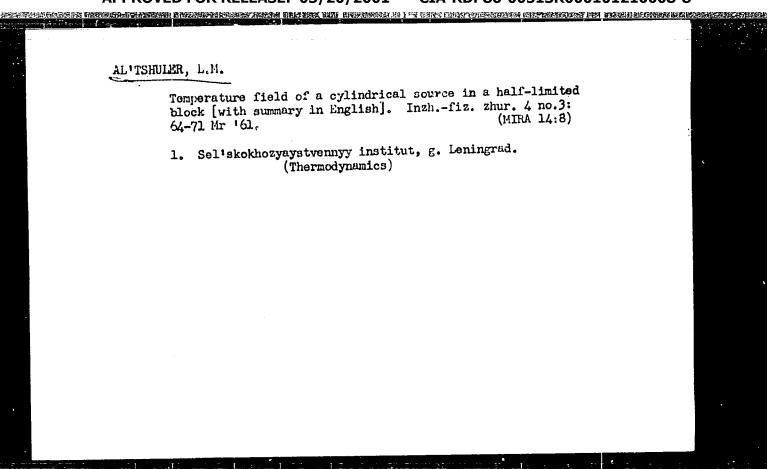
AL'TSHULER, L. M.

"Analytical Determination of a Tube Temperature in a Half-Intinite Massive."

Report submitted for the Conference on Heat and Mass Transfer, Minsk, BSSR, June 1961.



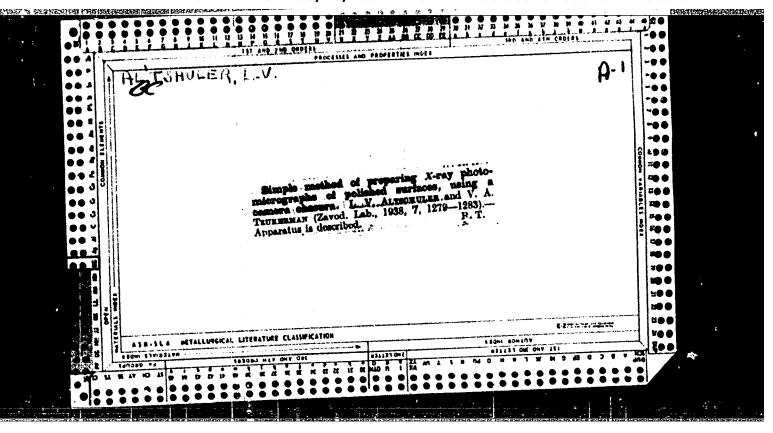
GOL'DBERG, N.A.; AL'TSHULER, L.N.; Prinimali uchastiye: MOLOCHNYY, V.B.;
ZHARIKOVA, V.I.

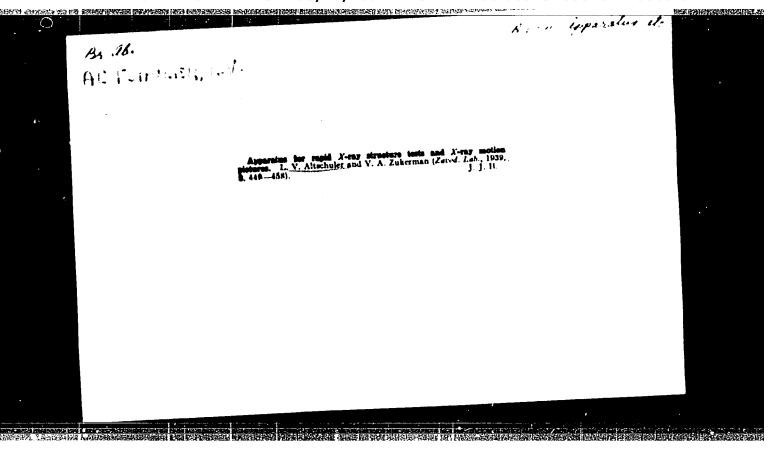
Macroscopic kinetics and the mechanism of urea synthesis from ammonia and carbon dioxide. Khim.prom. no.9:638-642 S (MIRA 15:11)

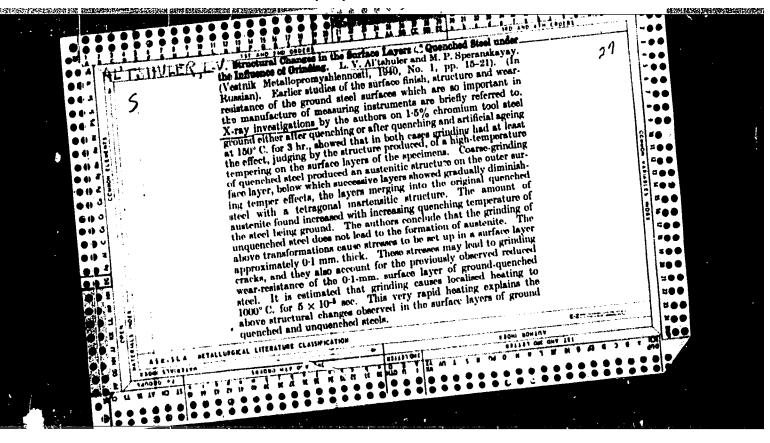
(Urea) (Ammonia) (Carbon dioxide)

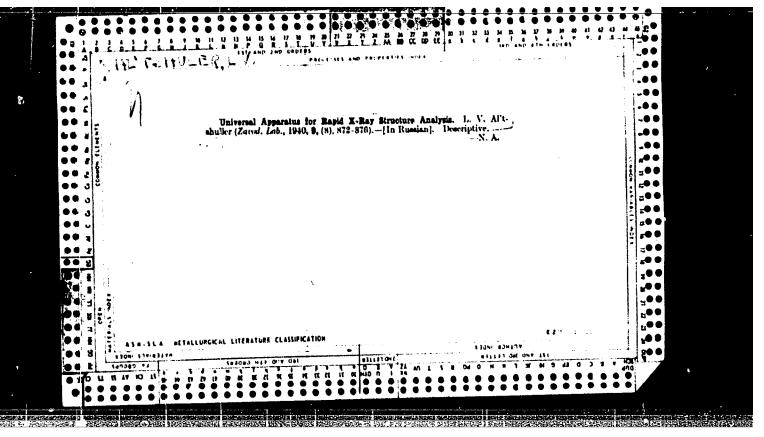
GOL'DBERG, N.A.; AL'TSHULER, L.N.

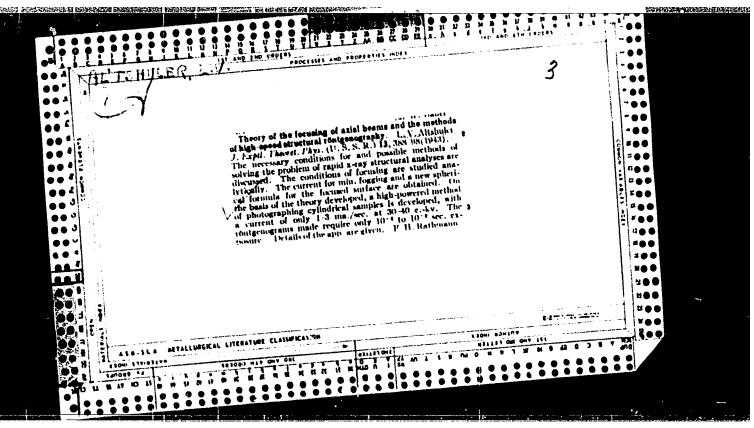
Macroscopic kinetics and mechanism of the synthesis of urea from ammonia and carbon dioxide. Khim.prom. no.1:54-57 Ja 64. (MIRA 17:2)

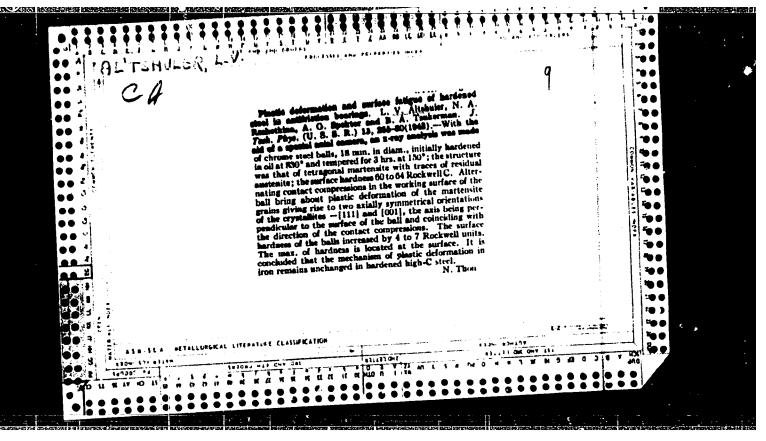


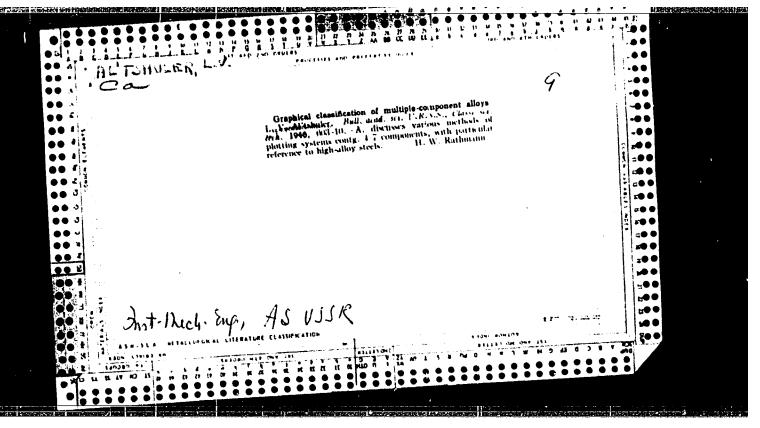












ALTSHULE L. V. Sur l'explosion dans un milieu compressible plastique. C. R. (Doklady) Acad. Set URSS (N.S.) 52, 199-202 (1946). The propagation of a selectical explosion wave in a plastic basis to the density in feel of the feel of set of the feel of the of the fe	HALL THE SECOND LINE TO SECOND LINE	HERITAGE AL PRESIDENTE DE LA PRESIDENTE DE	SHERENCE HARMONDER SCHOOL			CONTRACTOR AND A STATE OF THE S
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56-34-4-14/60

AUTHORS:

Al'tshuler, L. V., Krupnikov, K. K., Ledenev, B. N., Zhuchikhin, V. I., Brazhnik, M. I.

TITLE:

The Dynamic Compressibility and the Equation of State of Iron at High Pressures (Dinamicheskaya szhimayemost' i urav-

neniye sostojahiya pri vysokikh davleniyakh)

PERIODICAL:

Zhurnal eksperimental noy i teoreticheskoy fiziki, 1958,

Vol. 34, Nr 4, pp. 874 - 885 (USSR)

ABSTRACT:

This work discusses 2 methods for the description of the dynamic compressibility of materials, which are based upon the determination of the kinematic parameters - the propagation velocity and the mass velocity of the naterial behind the front. The measurement of wave velocities by means of donors being mounted in the path of the shock wave is relatively simple. In contrast to this the immediate observation of the mass velocity is impossible in most of the cases. The authors worked out 2 methods for the complex determination of the kinematic parameters of the wave, namely the "method of repelling" and the

Card 1/4

The Dynamic Compressibility and the Equation of State of 56-34-4-14/60 Iron at High Pressures

"method of slowing down". In the method of repelling the propagation of a strong crack is investigated, which forms on the occasion of the reflection of a demation wave at an elastic obstacle. The experimentally measurable quantities on this occasion are the wave velocity D and the velocity W of the displacement of the free surface of the obstacle on the initial part of the trajectory. W is approximately equal to the double part of the trajectory. W is approximately equal to the double mass velocity of the substance behind the wave front. The velocity of motion W is obtained by the material of the obstacle into the action of two different processes, namely of the shock-like transition from the state $P_0 = 0$; we into the state P_1 ; V_1 , and of the subsequent isentropic expansion in the method

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P₁; v₁, and of the subsequent issued to the method coming relief wave. The second paragraph deals with the method of the investigation and with the experimental technique. The third paragraph reports on the dynamic adiabatic line of the third paragraph reports on the dynamic adiabatic line of the iron. A table gives the parameters of all experimentally stated iron. A table gives the parameters of all experimentally stated iron. A table gives the parameters of the shock in iron. Within the whole investigated donain of the mass velocities

Card 2/4

The Dynamic Compressibility and the Equation of State 56-34-4-14/60 of Iron at High Pressures

from V = 1,0 to V = 5,17 km/sec the linear relationship D =3,80 + 1,58 U is valid for the propagation velocity D of · the shock wave. In the next paragraph the compression of iron at the temperature zero is computed and in the last paragraph the curve of the compressibility of iron is extrapolated to the domain of relatively low degrees of compression. The developed method allows to fix the dynamic adiabatic curve of iron with different initial density within the interval of pressures of from 4.105 to 5,106 atmospheres. The dynamic adiabatic curve of porous iron with decreased initial density is in the diagram pressure - density considerably higher than the adiabatic of the compact material which speaks for the great influence of the thermic component in the shock-like compression. The authors derived an empirical equation of state of iron and ascertained the course of the curve of the cold compressibility unto the densities 9 = 1,790. This work was carried out on the initiative by Ya.B.Zel'dovich. The authors also mention the comperation of a number of other authors.

Card 3/4

56-34-4-15/60

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AUTHORS:

Al! tshuler, L. V., Krupnikov, K. K., Brazhnik, M. I.

TITLE:

The Dynamic Compressibility of Metals Under Pressures of From 400 000 to 4 Million Atmospheres (Dinamicheskaya szhimayenost' metallov pri davleniyakh ot chetyrekhsot tysyach do

chetyrekh millionov atmosfer)

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958,

Vol. 34, Nr 4, pp. 886 - 893 (USSR)

ABSTRACT:

This paper reports on the bases of a method for the experimental determination of the dynamic compressibility of copper, zinc, cadmium, tin, silver, gold, lead, and bismuth at pressures of from 400 000 to 4 000 000 atmospheres. In the case of all these materials the knowledge of only one dynamic adiabatic curve is not sufficient for the determination of the equations of state, which establish a relation between the pressure and the temperature and density. Yet the data on the shock-like compressibility at pressures of hundred thousands and millions of atmospheres are very valuable for the verification of the theoretical

Card 1/3

The Dynamic Compressibility of Metals Under Pressures of From 400 000 to 4 Million Atmospheres 56-34-4-15/60

ideas on the behaviour of matter on such conditions. The authors investigate the transition of a shock wave with known amplitude from the medium A into the substance B. The experimental method is discussed in detail. A plane shock wave caused by an explosion passed an iron shield to which samples of iron and of the materials to be investigated were pressed. The 3 series of experiments differ in the pressure of the shock wave in the shield. The propagation velocities of the shock wave obtained in these experiments are composed in a table. There are also given the parameters of the shock waves in the iron shields and the initial densities 90 of the in-

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vestigated samples. In all investigated metals, with the exception of tin, the dependence of the displacement velocity D of the wave front in the undisturbed medium on the velocity U of matter behind the wave front for U > 1 km/sec is sufficiently exactly approximated by linear relationships of the kind D = $C_0^1 + \lambda$ U. The degree of compression in a certain way

depends on the initial atom volume. In the case of increasing pressures the wave velocity and the mean modulus of the shock-

Card 2/3

The Dynamic Compressibility of Metals Under Pressures of From 400 000 to 4 Million Atmospheres

56-34-4-15/60

-like compression increase for many times. The authors thank A.N.Kolesnikova, S.N.Pokrovskiy, A.L.Zhiryakov, M.M.Pavlovskiy and V.P.Drakin for their cooperation in this work. There are 5 figures, 5 tables and 3 references, 2 of which are Soviet.

SUBMITTED:

December 28, 1957

1. Metals -- Mechanical properties

Card 3/3

SOV/20-121-1-17/55 Trunin, R. F. Al'tshuler, L. V., Bakanova, A. A., AUTHORS: Phase Transformations Whon Water Is Compressed by Strong Shock Waves (Fazovyve prevrashcheniya pri szhatii vody sil'-TITLE: nymi udarnymi volnami) Doklady Akademii nauk SSSR, 1958, Vol. 121, Nr 1,pp. 67-69 PERIODICAL: (USSR) This paper gives a report on the shock-like compression of water in the range of prescures from 20 000 to 800 000 at-ABSTRACT: mospheres. On this occasion the kinematic parameters of the shock wave, namely, its velocity of propagation D and mass velocity U of matter behind the wave front, were measured. Because of the laws of conservation of mass and momentum these parameters are connected with the density of the shocklike compression Q = Q D/(D - U) and with the pressure $P = Q_0DU$; Q_0 denotes the density of matter before the compression. The method of investigation can be simplified very much when the shock wave is lead to the layer of the substance to be investigated through shields of a material with known Card 1/2

SOV/20-121-1-17/55

Phase Transformation Then Water Is Compressed by Strong Shock Waves

Hugoniot (Gyugonio) adiabatic line of the shock compression. The quantities measurable by experiment are the speed of the shock waves in the shield and in water. The dynamical adiabatic line of water consists of two sections which with their ends fix the region of phase transition. The existence of the phase transition is also proved by the decrease in transperency of water when a shock wave of sufficiently high amplitude of pressure P > P, goes through. In the case of shock waves with an amplitude of pressure P < P, the transparency does not change. There are 4 figures and 5 references, 1 of which is Soviet.

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PRESENTED:

January 17, 1958, by Yu. B. Kharitonov, Member, Academy of

Sciences, USSR

SUBMITTED:

November 26, 1957

1. Water--Pressure 2. Water--Properties 3. Phase transitions

1. Water---ressure 2. madel-lite Physical effects
4. Shock waves---Physical effects

Card 2/2

"APPROVED FOR RELEASE: 03/20/2001

CIA-RDP86-00513R000101210008-8

621,15 s/056/60/038/03/14/033 B006/B014 Al'tshuler, L. V., Kormer, S. B., Bakanova, A. A., Trunin, R. F. AUTHORS: Equation of State for Aluminum, Copper, and Lead in the High-TITLE: pressure Range Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, PERIODICAL: Vol. 36, No. 3, pp. 790-798 TEXT: In the present paper, the authors discuss the conclusions applying to aluminum, copper, and lead, as result from an equation deviating from the Mie - Grueneisen solid-state equation. The equation considered by the authors deviates in that it holds within a wide pressure- and temperature range, and that the thermal electron components of energy and pressure are taken into account. Moreover, data are furnished concerning dynamic compression of aluminum up to pressures of 2.100 atm, and results of new measurements of the compressibility of copper, lead, and iron at 106, 2.106, and 4.106 atm are offered. Numerous theoretical and experimental details concerning the adiabatics of these three metals are discussed in the introduction, with special regard to the collision adiabatics (Ye. I. Zababakhin, Yu. F. Card 1/3

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Equation of State for Aluminum, Copper, and Lead S/056/60/038/03/14/033 in the High-pressure Range B006/B014

Alekseyev). Ansatzes for the equation of state and internal energy have the form $P = P_{int} + P_{therm} + P_{exc}$ and $E = E_{int} + E_{therm} + E_{exc}$ (2). The first terms of these sums characterize the interaction of atoms at $0^{\circ}K$, the second terms are thermal ones determined by lattice vibrations, and the third terms are determined by the thermal excitations of electrons. In the following, the various terms are written down explicitly; and finally, the following explicit expressions are obtained for pressure and temperature:

$$P = P_{int} + \frac{\delta_{p}^{c} c_{vp}}{v} \left[T - T_{o} + E_{o} / c_{vp} \right] + \frac{1}{4} \beta_{o} \beta_{o} \left(v_{o} / v \right)^{1/2} T^{2} \text{ and}$$

$$E = \int_{v}^{vok} P_{int} dv + E_{o} + C_{vp}(T-T_{o}) + \frac{1}{2} \beta_{o}(v/v_{o})^{1/2}T^{2}. \text{ According to equation (1)}$$

for the dynamic adiabatics $P_G = \sum a_k (o - 1)^k$, dynamic experiments permitted a determination of pressure P_G and also of energy $E_G = E_O + \frac{1}{2}P_G(v_O - v)$.

Results of computations for aluminum are given in Table 5, for copper in Table 6, and for lead in Table 7. As is shown by Figs. 1 and 2, thermal.

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Equation of State for Aluminum, Copper, and Lead in the High-pressure Range

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pressure plays an important part in the compression of metals by strong shock waves. For the pressures 216.10¹⁰ bars (Al), 388.10¹⁰ bars (Cu), and 401.10¹⁰ bars (Pb), the thermal pressure components amounted to 59.10¹⁰, 115.10¹⁰, and 124.10¹⁰ bars. For the same pressures, the thermal energy component was 57% (Al), 60% (Cu), and 69% (Pb). Finally, the authors thank A. I. Funtikov, R. V. Malyshev, and I. P. Dudoladov, as well as Professor K. A. Semendyayev for their assistance, advice, and discussions. L. D. Landau is also mentioned in this article. There are 2 figures, 7 tables, and 14 references, 4 of which are Soviet.

SUBMITTED: October 7, 1959

Card 3/3

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s/056/60/038/004/006/048 B019/B070

144100 AUTHORS: Al'tshuler, L. V., Kormer, S. B., Brazhnik, M. I., Vladimirov, L. A., Speranskaya, M. P., Funtikov,

TITLE:

The Iscentropic Compressibility of Aluminum, Copper, Lead,

and Iron at High Pressures

PERIODICAL:

Zhurnal eksperimental noy i teoreticheskoy fiziki, 1960,

Vol. 38, No. 4, pp. 1061-1073

TEXT: New methods of investigation of the properties of materials at high pressures depend on the application of shock waves. Two parameters are determined: the velocity of propagation of the shock waves, and the particle velocity at the front, which enable the pressure and the density of the shock compression to be determined. Another important kinematic parameter is the velocity of sound in the shock compressed material. This quantity characterizes the velocity of propagation of small disturbances in the compressed material. These small disturbances are weak shock waves and discharge waves, and are of importance in geophysical and other similar investigations. In the present paper, a method is suggested for

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The Iscentropic Compressibility of Aluminum, Copper, Lead, and Iron at High Pressures

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the measurement of the velocity of sound in the front of strong shock waves, and results of investigations for aluminum, lead, and iron for the pressures between $4\cdot 10^5$ and $3\cdot 5\cdot 10^6$ atm are given. In the first section a method of measuring the velocity of sound is given which depends on measurement with the discharge waves. In this method the decrease of pressure due to the superposition of the discharge and dilatation waves in the zone of the boundary of the sample in the form of a stepwise built cylinder is measured photochronographically. In the second section, elastic and plastic discharge waves are discussed. In the third part, a method of measurement is discussed in which the collision of a plate and a sample from a material of known dynamic adiabatics is studied. This method leads to an experimental determination of the trajectories of the shock waves, and to the measurement of the particle velocities at one or more points of these trajectories. In the fourth part, the data given in Tables 2, 3, 4, and 5 are discussed in detail. In the last two sections, the isoentropic compressibility of the metals, and the upper limit of "cold" compression are studied on the basis of the results obtained here; and an estimate of the thermal energy and the temperature is made. In the present paper, the existence of two sound velocities corresponding to the

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The Isoentropic Compressibility of Aluminum, Copper, Lead, and Iron at High Pressures

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elastic and plastic states of matter are established. The velocities of sound, and the isoentropic compressibilities in the above mentioned pressure range, the estimates of thermal energies; the temperature of shock compression; and the Grüneigen coefficients are given in tables. Yu. M. Shustov is mentioned. The paper was started in 1948 on the initiative of Academiciam Ya. B. Zel'dovich. The Corresponding Member of the AS USSR Ye. I. Zababakhin is thanked for many valuable advices. K. K. Krupnikov, B. E. Ledemev, and A. A. Bakanova are thanked for discussions. Professor V. A. Tsukerman and his colleagues I. Sh. Model' and M. A. Kanunov helped in the constructional problems. Some data were obtained from V.I.Borodulin. N.S. Tenigir, A. N. Kolesnikova, L. E. Gorelova, and E. S. Shvetsov helped in the experimental work. There are 10 figures, 7 tables, and 6 references: 5 Soviet and 5 US.

SUBHITTED: October 7, 1959 (initially), January 3, 1960 (after revision)

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Card 3/3

ALTSHULTE, L.V. \$/056/60/039/01/02/029 B006/B070 Al'tshuler, L. V., Kuleshova, L. V., Pavlovskiy, M. N. AUTHORS: Dynamical Compressibility, Equation of State, and Electrical TITLE: Conductivity of Sodium Chloride at High Pressures Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, PERIODICAL: Vol. 39, No. 1 (7), pp. 16-24 TEXT: The authors report on the compressibility and conductivity of single crystals of rock-salt under pressures ranging from 50.103 to 800.10 atm. That many dielectrics show much higher conductivity during the passage of shock waves, was discovered by A. A. Brish, M. S. Tarasov, and V. A. Tsukerman in 1950. A similar effect in dynamically loaded ionic and molecular crystals was detected in 1956. The relationship between the dynamical and electrical properties, and the characteristic of shock waves has, however, not yet been investigated. To do so was the purpose of the present work. The dynamical compressibility of single crystals of rock-salt (2.16 $\rm g/cm^3$) was measured by a method Card 1/3

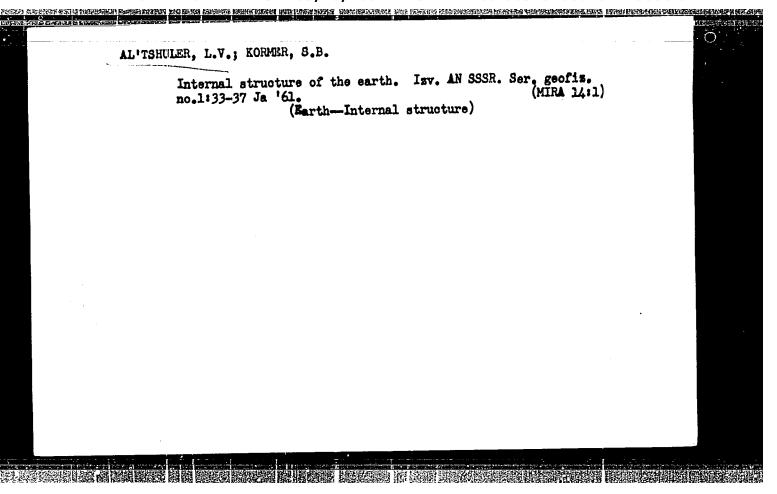
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Dynamical Compressibility, Equation of State, S/056/60/039/01/02/029 and Electrical Conductivity of Sodium Chloride B006/B070

described in Ref. 5. The parameters of the measured shock adiabatics are compiled in Table 1. Fig. 1 shows the DU-diagram of the shock adiabatics, D and U denoting the wave and mass velocities of the shock wave. The highest applied pressure increased the crystal density 1.85 times. Fig. 2 shows $P_g(\delta)$, and Fig. 3 $P(\delta)$; P_g denotes the pressure of shock compression, $\delta = v_{OK}/v$, v is the specific volume behind the shock wave in the initial state, and v_{OK} is the same at O^{OK} . In the following, the volume dependence of Grüneisen coefficients T(v) is investigated starting from an expression due to Slater and L. D. Landau, and also from one in Ref. 9. Two expressions (7a) and (7b) are obtained giving γ as a function of n and δ . n is a parameter taken from the theory of ionic crystals and lies between 7.84 and 9.1 (Refs. 10 and 11). The two γ -formulas are again transformed into (9a) and (9b) which give γ as functions of δ , the lattice parameter ρ , and the interatomic distance r. Analysis shows that, in the range of densities investigated, the repulsive force may be represented in the form Be $^{-r/\rho}$ with $\rho = 0.318$ A. In this range the

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AUTHORS:

Alitshuler, L. V. and Petrunin, A. P.

TITLE:

X-ray study of the compressibility of light substances in

slanting collision of shock waves

PERIODICAL:

Zhurnal tekhnicheskoy fiziki, v. 31, no. 6, 1961, 717-725

TEXT: The present paper describes an X-ray method for studying regular slanting reflections and slanting collisions of shock waves in solids and liquids. The method serves for determining the pressures and densities in the region of stepwise "twofold" compression behind the front of reflected shock waves. The authors investigated light metals (magnesium, aluminum) and light-atom compounds diaphanous to X-rays (water, paraffin, plexiglass). They found, for all substances in the area of reflection, high densities and pressures of 600,000 - 900,000 kg/cm exceeding by a multiple the pressures of shock waves before collision. Reflections with relatively small angles of incidence of shock waves are studied. It is shown that the parameters of the incident waves and the angle formed by the front of the reflected shock wave with the reflection plane must be

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X-ray study of the compressibility ...

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known to determine the parameters in the region of twofold compression. For determining this angle, the authors used the pulse radiography illustrating the momentary position of shock waves within the X-rayed specimen. To illustrate the method, they first study the collision of waves of the same intensity (reflection of a wave from an absolutely rigid obstacle)(Fig. 2). In regular reflection, the space above the reflecting wall is divided into three regions: "O" is the region of rest, "1" is the region of a single shock-compression between the fronts of the incident and the reflected wave, "2" is the region of twofold shock-compression between the front of the reflected wave and the obstacle. Fig. 2 shows the position of the incident and of the reflected wave for two points of time. q are the velocities of the substance flow. The following equations are written down: $D_{12} = D_1 \frac{\sin \beta}{\sin \alpha} + U_1 \cos(\alpha + \beta), \tag{1}$

 $-D_1 \sin \alpha + D_1 \cos (\alpha - 1 - p),$

 $\Delta U_{12} = U_1 \frac{\cos \alpha}{\cos \beta}, \qquad (2)$ $\delta_3 = \sigma_1 \frac{D_{12}}{D_{12} - \Delta U_{12}}, \qquad (3)$

 $P_{1} = P_{1} + \rho_{0}\sigma_{1}D_{12}\Delta U_{12}, \tag{4}$

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23.75\$/057/61/031/006/012/019 X-ray study of the compressibility ... D_1 is the velocity of the incident shock wave, D_{12} that of the reflected wave, U is the mass velocity behind the front of the incident wave, $\Delta\,{\rm U}_{12}$ is the change of mass velocity at the front of the reflected wave. $\delta_2 = \frac{1}{2} = \frac{1}{10}$; $\sigma_1 = \frac{1}{10} = \frac{1}{10}$; $\sigma_1 = \frac{1}{10} = \frac{1}{10}$ is the density of the substance at rest, in single, and in twofold shock-compression, respectively; P, is the pressure in "1", and Po in "2". It follows from (1) - (4) that the parameters of twofold compression are uniquely determined by the parameters of the incident wave, the angle of incidence α , and the reflection angle β . The parameters of the incident wave are found by usual dynamic methods, while α is given by the test conditions. β is determined from the X-ray pictures at the instant of collision of shock waves. Now, the authors study the regular reflection of shock waves from an elastic obstacle (Fig. 3) assuming that $P_2=P_3$ (pressure of the shock wave in the obstacle), and the flow behind the reflected wave moves in parallel to the obstacle. Instead of (2), $\Delta U_{12} = U_1 \frac{\cos \alpha}{\cos \beta} - \frac{\sin \epsilon}{\cos (\beta + \epsilon)} \left[\frac{D_1}{\sin \alpha} - U_1 \frac{\sin (\alpha + \beta)}{\cos \beta} \right]$. (2a) Card 3/85

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X-ray study of the compressibility ...

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is written down for this case. The angle ϵ can be determined, like β , from the X-ray picture. Figs. 4 and 5 show the arrangement of experiments. $\frac{1}{2}$ was found from $\frac{1}{2}$ /L. L is the distance between the aluminum foils on the preparatory X-ray picture, and L is the distance between them on the explosion X-ray picture. To attain high intensities of shock waves, the authors used a synchronous collision of two aluminum foils (6 mm thick, 70 mm diameter), the foils reaching a velocity of W = 3.44 km/sec (Fig. 5). The parameters of the shock waves generated by the shock on the aluminum foils in the specimens were determined from the pressurevelocity diagram (intersection of the dynamic adiabatics for the substances investigated with that for aluminum). The dynamic adiabatics for magnesium and aluminum were taken from papers by J. M. Walsh, M.H. Rice, R.G. Mc Queen, F.L. Yarger (Ref. 2: Phys. Rev., 108, no. 2, 196-216, 1957) and L.V. Al'tshuler, S.B. Kormer, A.A. Bakanova, R:F. Trunin (Ref. 3: ZhETF, 38, no. 3, 1960), that for water from papers by J. M. Walsh, M.H. Rice (Ref. 6: J.Chem. Phys., 26, no. 4, April, 1957) and L.V. Al'tshuler, A.A. Bakanova, R.F. Trunin (Ref. 7: DAN SSSR, 121, no. 1, 1958). The dynamic adiabatic for paraffin was obtained by Yu. F. Alekseyev

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X-ray study of the compressibility ... B116/B203

and V. P. Krupnikova, and that for plexiglass by A.A. Bakanova and P. Trunin. The data obtained are tabulated. The authors thank

and V. P. Krupnikova, and that for plexiglass by A.A. Bakanova and R. F. Trunin. The data obtained are tabulated. The authors thank Professor V. A. Tsukerman for advice given, A. I. Kuz'mich and B.A. Ushakov for assisting in the experiments, and A.A. Bakanova for a discussion. There are 9 figures, 1 table, and 8 references: 6 Soviet-bloc and 2 non-Soviet-bloc.

SUBMITTED: July 15, 1960

Card 5/8

18.8100 14.18.4016.15.30 24.7500 1144.01160, 1482, 165.2108 26693 1.1210 2808, 3008, 3108 210 B109/B102

AUTHORS:

Al'tshuler, L. V., Kormer, S. B., Bakanova, A. A., Petrunin,

A. P., Funktikov, A. I., Gubkin, A. A.

TITLE: Irregular conditions of oblique collision of shock waves in solids

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 5(11), 1961, 1382 - 1393

TEXT: On the basis of papers by V. Blikney, A. Taub (Sb. Voprosy raketnoy tekhniki, 1, 1951), L. D. Landau, Ye. M. Lifshits (Mekhanika sploshnykh sred - Mechanics of Continuous Media, Gostekhizdat, 1954), O. S. Ryzhov, S. A. Khristianovich (PMM, 22, 586, 1958), Ya. B. Zel'dovich, Gandel'man, and Ye. A. Feoktistova (DAN SSSR, 136, 1325, 1961) the authors describe a method of producing and recording irregular conditions for the collision of shock waves in solids. The experimental arrangement is shown in Fig. 2a. The detonation waves which enter the specimen at a slant cause shock waves with amplitudes of between 3 and 4.105 atm. Another arrangement allowed reaching shock waves of 1 - 1.8 · 106 atm. The parameters of the

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26693 \$/056/61/041/005/008/038 B109/B102

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Irregular conditions of oblique

three-shock configuration forming as a result of the collision of the shock waves, are given for aluminum, lead, iron, and copper bodies. Near the critical angle at which a shock wave can still arise pressure was found to rise by from 6 to 8 times. When the waves have greater amplitudes, pressure in the collision region rises up to 4.106 atm in aluminum. In steel, copper, and lead it may even reach 7 · 106 atm if the waves collide at right angles. The results are analyzed by means of the method of the impact polars. It is shown that the picture with only one tangential discontinuity cannot be employed in describing the irregular conditions of the oblique collision of weak shock waves in the metal. The authors present a method of determining pressure and density behind the reflected wave front from the parameters of the three-shock configuration. Pressure and density for the collision of strong shock waves in aluminum were calculated as examples. It was found that the incident and reflected waves increase the density of aluminum up to 6.12 g/cm3. M. P. Speranskaya, N. S. Tenigin (deceased), A. N. Kolesnikova, M. S. Shvetsov, L. N. Gorelova, and M. V. Sinitsyn are thanked for assistance and information. There are 14 figures, 3 tables, and 9 Soviet references.

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SUBMITTED: May 18, 1961 Card 2/3

Card 1/2

X

S/126/62/013/005/015/031
Deformation of steel ... E111/E435

High-temperature tempering first removes internal volume. stresses in twinning zones: these have the lowest recrystallization temperature. The intense - twinning zone is also formed in explosive deformation of specimens preheated to Where explosion waves meet sideways or frontally, zones 700°C. with great dynamic work-hardening are produced whose positions. indicate zones of maximum explosive pressures; when pressures decrease rapidly or if the intensity of the meeting waves is reduced, white lines are produced on the macro-sections with fewer twins, surrounding or completely replacing dark zones: it is not clear which causes the white lines to appear. the information obtained agrees with previously published work, most represents original material. Academician N.N.Davidenko and Professor V.A.Tsukerman gave valuable advice on this work. There are 12 figures.

SUBMITTED: July 29, 1961

Card 2/2

APPROVED FOR RELEASE: 03/20/2001 CIA-RDP86-00513R000101210008-8"

3/1000

S/056/62/042/001/015/048 B104/B102

18.8100

Al'tshuler, L. V., Bakanova, A. A., Trunin, R. F. AUTHORS:

Shock adiabats and zero isotherms of seven metals at high TITLE:

pressures

Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, PERIODICAL:

no. 1, 1962, 91-104

TEXT: The wave velocity D and the mass velocity U behind the shock-wave front were measured in Fe, Ni, Cu, Zn, Cd, Sn, and Pb. Pressure and degree of coopression were determined from $P = Q_0DU$ and $\sigma = D/(D-U)$. By

passing from the shock adiabat to the zero isotherm, the following simple equations were obtained for pressure and energy:

$$P_{x}(\delta) = Q[\delta^{1/4} \exp{(q(1-\delta^{-1/4}))} - \delta^{1/4}],$$

$$E_{\mathbf{x}}(\delta) = (3Q/\rho_{0k}) \left[q^{-1} \exp \left\{ q \left(1 - \delta^{-1/s} \right) \right\} - \delta^{1/s} \right]$$

where Q and q are unknown constants, $\delta = v_0/v$, v being the specific volume,

Card 1/83

34000 5/056/62/042/001/015/048 B104/B102

Shock adiabats and zero isotherms...

and $v_0 = v$ at P = 0 and $T = T_0$. In the case of ionic compounds, the first terms in (5) determine the ionic repulsion potential and the second terms determine the Coulomb attraction. In the case of metals, the positive and the negative term in (5) express the repulsive and the attractive forces, respectively. Similar equations were obtained for transition metals in the same way. Shock adiabats and zero isotherms were approximated by a suitable combination of Q and q (Figs. 5 and 6). Using the equation

Px, extra = b + B(o - a)ⁿ, the zero isotherms were extrapolated into pressure and density ranges, to which quantum statistical methods are applicable. The extrapolation constants are presented in Table 8.

K. K. Krupnikov, M. I. Brazhnik (ZhETF, 34, 886, 1958), S. B. Kormer, V. D. Urlin, L. T. Popova (FTT, 3, 223, 1961), V. S. Zharkov, and V. A. Kalinin (DAN SSSR, 135, 811, 1960) are mentioned. V. N. Zubarev is thanked for his assistance in interpreting experimental data, M. I. Brazhnik, A. A. Gubkin, and I. P. Dudoladov for their help in experiments and calculations, and S. B. Kormer and V. D. Urlin for discussions. There are 9 figures, 8 tables, and 14 references:

Card 2/52

APPROVED FOR RELEASE: 03/20/2001 CIA-RDP86-00513R000101210008-8"

INCOMENDATION OF THE PROPERTY OF THE PROPERTY

34000 \$/056/62/042/001/015/048 B104/B102

Shock adiabats and zero isotherms...

9 Soviet-bloc and 5 non-Soviet-bloc. The four most recent references to English-language publications read as follows: R. G. McQueen, S. P. Marsh. J. Appl. Phys. 31, 1253, 1960; J. M. Walsh et al. Phys. Rev. 108, 196, 1957; J. J. Gilvarry. Phys. Rev. 102, 317, 1956; J. S. Dugdale, D. K. McDonald. Phys. Rev., 89, 832, 1953.

SUBMITTED: August 10, 1961

Table 1. Experimental results. Legend: (1) shock-wave parameters.

Table 2. Experimental results. Legend: (1) material of impact mass; (2) velocity of impact mass.

Table 8. Extrapolation constants.

Fig. 5. Shock adiabats and zero isotherms of Ni and Zn.

Fig. 6. Shock adiabats and zero isotherms of Fe.

Card 3/85

S/181/63/005/001/043/064 B108/B180

AUTHORS:

Al'tshuler, L. V., Pavlovskiy, M. N., Kuleshova, L. V., and Simakov, G. V.

TITLE:

Study of alkali metal halides under the high pressures and

temperatures of shock compression

PERIODICAL:

Fizika tverdogo tela, v. 5, no. 1, 1963, 279-290

TEXT: To investigate the interaction forces of the ions of alkali halide salts the authors studied the shock compression of LiF, KCl, NaI, KBr, and CsI crystals in the pressure range $2 \cdot 10^{10} - 10^{12}$ bar. The pressure was created by exploding a charge which threw a steel plate against a metal screen on the other side of which the sample was attached. Phase transformation of KCl and KBr was observed during the shock compression, probably a transition from NaCl-type structure with coordination number 6 to CsCl-type structure with coordination number 8. There was considerable increase in internal energy of LiF, KBr, and CsI after the compression. The experimental data are used to derive semiempirical equations of state

Card 1/2

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ACCESSION NR: AP5006388

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5/0053/65/085/002/0197/0258

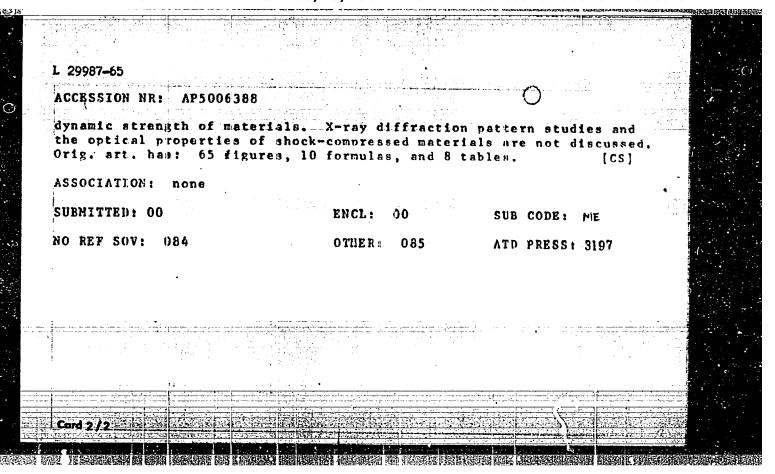
AUTHORI Al tehuler, L. V.

TITLE: Application of shock waves in high-pressure, physics

SOURCE: Uspekhi fizicheskikh nauk, v. 85, no. 2, 1965, 197-258

TOPIC TAGS: high pressure, shock wave, high pressure physics, compression, explosion, phase transformation, adiabatic

ABSTRACT: The present review of the application of shock waves in high-pressure physics is based on 169 references, of which over 50 percent are Soviet. The review is divided into aleven sections: shock adiabatics and their experimental determination; methods of obtaining semiempirical equations of state; detonation of condensed explosives and shock compression of superdense gares; shock adiabatics and null isotherms of metals; sound velocity and isentropic elasticity of shock-compressed bodies; (collisions of shock waves; peculiarities of flows with phase transitions and phase transformations in iron; equations of state and phase transformations of ionic crystals; transitions into a metallic state; composition of the earth's nucleus and mantle; and



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SOURCE CODE: UR/0386/66/003/012/0483/0487

AUTHOR: Al'tshuler, L. V.; Bakanova, A. A.; Dudoladov, J. P.

ORG: none

TITLE: Peculiarities of shock compression of lanthanides

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 12, 1966, 483-487

TOPIC TAGS: lanthanide series, lanthanum, cerium, samarium, dysprosium, erbium, second order phase transition, adiabatic compression, high pressure, critical pressure, mechanical shock resistance

ABSTRACT: The authors report the first results of an investigation of the dynamic compressibility of Ia, Ce, Sm, Dy, and Er up to 3.5 Mbar pressure. The shock-compression parameters were obtained by the reflection method (L. V. Al'tshuler, Uspekhi fiz. nauk v. 85, 197, 1965 and earlier) using apparatus described elsewhere (ZhETF v. 38, 790, 1960 and Fiz. tverdogo tela v. 5, 279, 1963). The directly measured quantities were the velocities d of the shock wave in the investigated metals. These were used to determine the mass velocities u, the shock compression pressures P, and the degrees of compression s. The d-u plot of each of the lanthanides, obtained from the experimental data, is represented with high

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3

accuracy by two straight-line segments of different slopes. The slopes and intercepts of all the segments are determined and tabulated. The shock adiabats were also plotted for Sm, Dy, and Er, for which the change in slope of the d-u plot was most pronounced. The adiabats exhibit kinks near the critical pressures, indicating the presence of a second-order phase transition. The more gently sloping sections of the adiabats are probably determined by the compression of the external low-density 6S shells and by the simultaneously occurring redistribution of the electrons among the bands. The change in slope at the critical pressure signifies the completion of these processes and the formation of low-compressibility electronic configuration. A more complete interpretation of the data calls for calculation of the energy spectra of the Compressed metals. The authors thank Corresponding Member of the Academy of Sciences SSSR, Professor N. P. Sazhin, as well as Engineers L. A. Dolomanov and V. M. Murav'yeva for interest and collaboration. Orig. art. has: 2 figures, 2 formulas, and 1 table.

SUB CODE: 20/ SUBM DATE: 25Apr66/ ORIG REF: 008/ OTH REF: 003

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٠.	L 18832-66 EWT(m)/EWP(t)/EWP(k) IJP(c) JD/HW ACC NR: AP6003485 (A) SOURCE CODE: UR/0020/66/166/001/0067/0070	
	AUTHOR: Al'tshuler, L. V.; Novikov, S. A.; Divnov, I. I.	
	ORG: none	
_	TITLE: The relationship between critical breaking point and rupture time in explosively loaded metals	
	SOURCE: AN SSSR. Doklady, v. 166, no. 1, 1966, 67-70	
	TOPIC TAGS: explosive forming, copper, mechanical shock resistance, ductility, rupture strength, shock wave velocity, pressure gradient ABSTRACT: Ductile cleavage during impact loading in copper was studied. The study was undertaken in view of the fact that previous at large resistance, ductility,	
•	provide clear criteria for musture Control Studies on cleavage have failed to	
	critical rupture pressure from 35.5 to 78.103 atm. A theoretical analysis is pre-	
1	on plastic shock wave velocity and its interaction with surface barriers. Ductile cleavage resulting from explosive loading is graphed. A graph of time as a func-	
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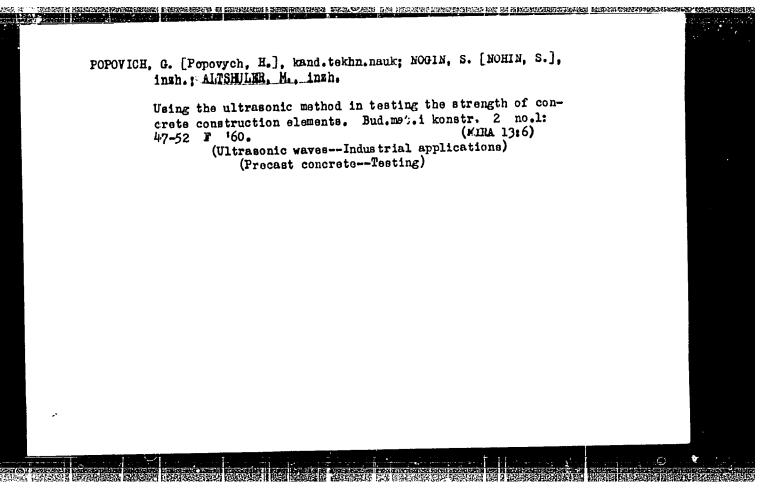
tion of Lagrange coordinate distance is given in which the shock wave is shown in various positions for various conditions, including ductile cleavage formation; rupture time was determined from this graph by drawing a line parallel to the time axis from the minimum in the rupture curve to the intersection with the negative pressure wave line (characteristic of the boundary). Similar graphs were made for clad metals, considering the effects of the collisions of the shock waves with the interfering boundaries. A detailed analysis was given for copper clad with aluminum with an additional plot of pressure as a function of wave velocity. The critical rupture pressure was calculated by means of the expression

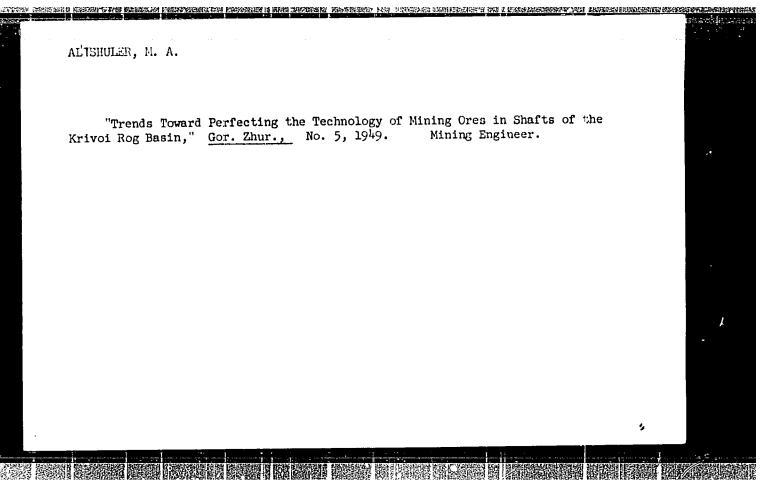
 $P_{\rm cr} = \rho_0 \sigma_0 (w_0 - \bar{w}_0)$

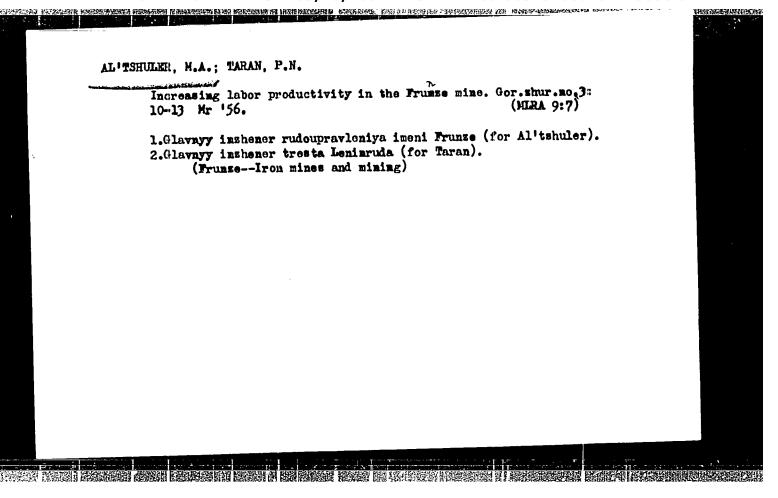
where ho_0 and σ_0 are the values of the density and speed of sound in the material; w_0 and $ar w_0$ are the initial and average velocities of the shock wave at the free surface. Test data on explosively deformed copper sheets are presented in which the critical rupture pressure was calculated from the above equation for various charge distributions, varying sheet thicknesses and wave velocities. The dependence of the rupture time on the value of the negative pressure (reflected wave) was plotted. It is concluded that the resistance of the metal to rupture is not a function of its strength but is dependent on the pressure gradient and the shock wave velocity. Orig. art. has: 4 figures, 2 tables.

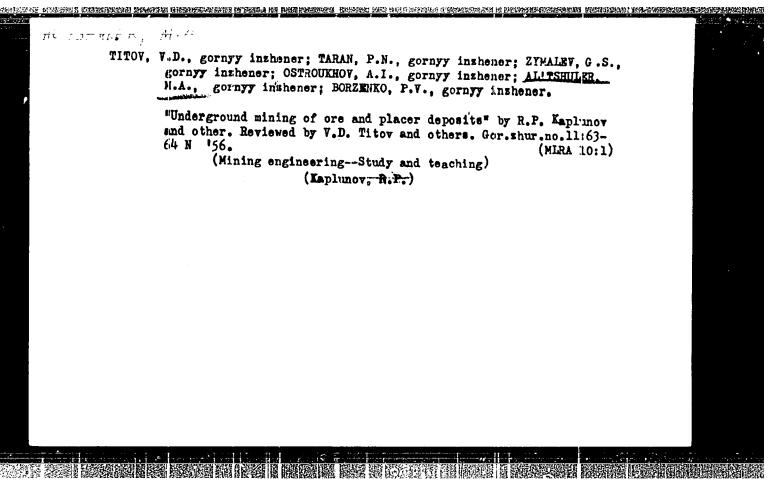
ORIG REF: 006/ OTH REF: SUBM DATE: 19Apr65/ SUB CODE: 11/.

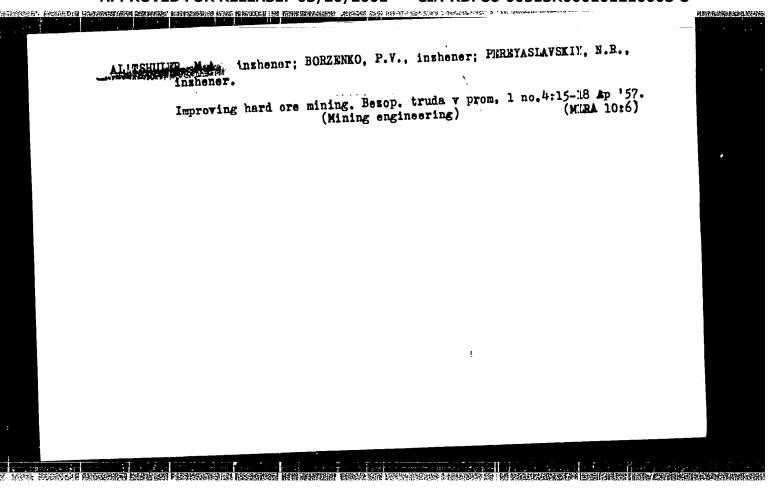
Card 2/2











AL'TSHULER, Mikhail Abramovich, kand.tekhn.nauk; SOSEDOV, O.O., red.;
SNOLDYREV, A.Ye., red.izd-va; MIKHAYLOVA, V.V., tekhn.red.

[Underground exploitation of thick layers of hard ore] Podsemmia razrabotka meshchnykh zelezhei krepkikh rud. Moskva, Gos. nauchnotekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1958.

235 p. (Mining engineering)

(MinA 11:7)

ALTSHULER MA.

Dissertations. Dept. of Technical Sciences, Jul-Dec 1957. Vest. Ak Nauk SSSR, 1956, No. 4, pp.123-123 (USSR)

At the Hining Institute the following dissertations were defended: for the degree of Doctor of Technical Sciences:

- A. Ch. MUBIN Investigation of the System With Open Parification Space With Adaption to the Exploitation of Sloped Deposits of Drhezkazyan.
- M. A. AL'TSHULER Improvement of the Exploitation System by Means of Mine Production.
- F. A. MIRSUKOV Investigation of the Emportant Parameters of the Subterranian Extraction by Means of Deep Gaps in the Emploitation of Thick Deposits of Solid Ores With a Magnetic Anomaly of Kursk.
- V. I. CHICHCLZIN Determination of the Optimum Parameters of the Pits Under the Condition of the Krasnosimeyak District of the Donets Basin.
- G. P. MIKONOV Investigation of the Hollowing Out of Uncovered Rocks in a Hydraulic Excavator Exploitation of Coal Deposits.
- A. D. RIMORISEV Investigation of the Suitability of the Exploitation of Steep Layers of a Shickness of $2-k_B$ by Means of a Shield System.

SOV/127-59-1-2/26

AUTHOR:

Al'tshuler, M. A., Candidate of Technical Sciences

TITLE:

Ways of Raising Labor Productivity in the Krivoy Rog Basin Mines (Puti povysheniya proizvoditel'nosti truda na

shakhtakh Krivorozhskogo basseyna)

PERIODICAL:

Gornyy zhurnal 1959, Nr 1, pp 7-11 (USSR)

ABSTRACT:

Labor productivity in the mining industry of the Krivoy Rog basin only slightly increased in the last few years in spite of the introduction of new working methods, new machinery and the mechanization of various mining operations. It can be explained by the shortcomings in production organization and technological processes. Inadequate mechanization of auxiliary and labor consuming work, and the necessity of transferring mining operations to the much deeper levels were also contributing factors. After proposing different improvements in various branches of mining operation, the author concludes that for the further improvement of production organization, more independence should be given to managers and engineering-technical personnel in the solution of all technical and economical problems; the number of

Card 1/2

auxiliary workers must be greatly reduced and the workers!

SOV/127-59-1-2/26

Ways of Raising Labor Productivity in the Krivoy Rog Basin Mines

compound brigades should be extended. There are 3 tables.

ASSOCIATION: Dnepropetrovskiy sovnarkhoz (The Dnepropetrovsk Sovnarkhoz)

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CHERNENKO, A.R.; SIMFOROV, G.Ye.; SHKUTA, E.I.; TEREKHOV, I.P.;

POLYANSKIY, F.S.; PISANKO, K.S.; SHENDRIK, V.K.; AL'TSHULER,

M.A.; RIVKIN, I.D.; ENGEL', Ya.R.; CHETYRKIN, M.I., red.izd-va;

PYL'NEN'KIY, A.A., red.izd-va; OSVAL'D, E.Ya., red.izd-va;

PROZOROVSKAYA, V.L., tekhn.red.

[Sharp increase in the labor productivity of Krivoy Rog Basin miners; practices in the "Bol'shevik" and "Gigant" mines]
Krutoi pod mem proizvoditel nosti truda gorniakov Krivbassa;
iz opyta raboty shakht "Bol'shevik" i "Gigant." Moskva, 1960.

173 p.

(Krivoy Rog Basin--Iron mines and mining--Labor productivity)

TO THE OWN WINDSHIP THE OWN THE PROPERTY OF TH

VINOGRADOV, V.S., inzh.; AL'TSHULER, M.A., kand. tekhn. nauk; POLYAKOV, V.G., inzh.; KUROCHKIN, A.N., inzh.; KARMAZIN, V.I., doktor tekhn. nauk; ZAIKIN, S.A., inzh.; OSTROVSKIY, G.P., inzh.[deceased]; NAUMENKO, P.I., inzh.; BOBRUSHKIN, L.G., inzh.; RUSTAMOV, I.I., inzh.; SHIFRIN, I.I., inzh.; GOLOVANOV, G.A., inzh.; KRASOVSKIY, L.A., inzh.; TSIMBALENKO, L.N., inzh.; RAVIKOVICH, I.M., inzh.; BAZILEVICH, S.V., kand. tekhn.nauk; ZORIN, I.P., inzh.; ZUBAREV, S.N., inzh.; TIKHOVIDOV, A.F., inzh.; SHITOV, I.S., inzh.; GAMAYUROV, A.I., inzh.; KUSEMBAYEV, Kh.N., inzh.; DEKHTYAREV, S.I., inzh.; VORONOV, I.S., inzh.; BURMIN, G.M., inzh.; BARYSHEV, V.M., inzh.; GOLOVIN, Yu.P., inzh.; MARCHENKO, K.F., inzh.; RYCHKOV, L.F., inzh.; NESTERENKO, A.M., inzh.; KABANOV, V.F., inzh.; PATRIKEYEV, N.N., inzh.[deceased]; ROSSMIT, A.F., inzh.; SOSEDOV, 0.0., inzh.; POKROVSKIY, M.A., inzh., retsenzent: POLOTSK, S.M., red.; GOL'DIN, Ya.A., glav. red.; GOLUBYATNIKOVA,G.S., red. izd-va; BOLDYREVA, Z.A., tekhn. red.

> [Iron mining and ore dressing industry] Zhelezorudnaia promyshlennost'. Moskva, Gosgortekhizdat, 1962. 439 p.

> > (MIRA 15:12)

1. Moscow. TSentral nyy institut informatsii chernoy metallurgii. (Iron mines and mining) (Ore dressing)

AL'TSHULER, M.A., kand.tekhn.nauk

Ways of increasing labor productivity at Krivoy Rog Besin mines. Gor.zhur. no.1:10-15 Ja 165. (MIRA 18:3)

1. Pridneprovskiy sovet narodnogo khozyaystva, Dnepropetrovo:

APPROVED FOR RELEASE: 03/20/2001 CIA-RDP86-00513R000101210008-8"

AL'TSHUIER, K.A.

Theory of the capillary impregnation by wetting liquids of porous materials having dead-end capillaries. Koll.zhur. 23 no.6:646-651 N-D '61.

1. Nauchno-issledovatel'skiy institut vnedreniya percedovogo opyta v stroitel'stvo i tekhnicheskoy informatsii, klyev.

(Porous materials) (Capillarity)

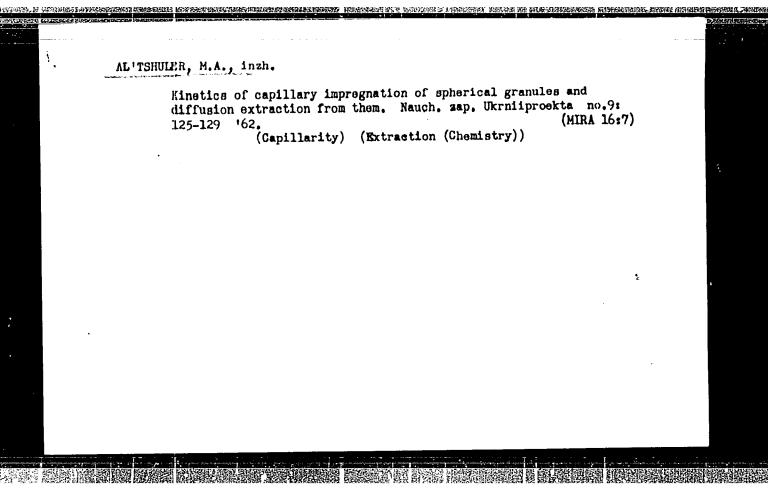
ZATTSEVA, K.A.; SHULEPOV, Yu.V.; AL'TSHULER, M.A.

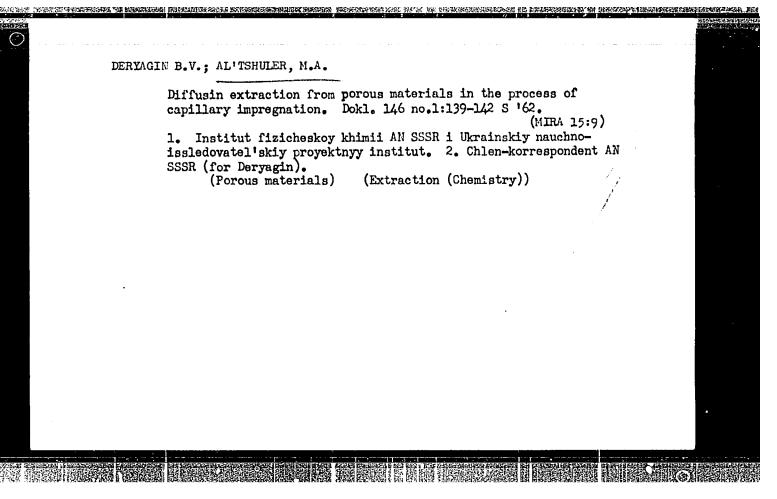
Deposition of aerosols from laminar flow under the effect of gravity.

Koll.zhur. 23 no.6:687-689 N-D '61. (MIRA 14:12)

1. Institut obshchey i neorganicheskoy khimii AN USSR, Kijev.

(Aerosols) (Laminar flow)





DERYAGIN, B.V.; AL'TSHULER, M.A.

Effect of the physicochemical properties of entrapped gases on the impregnation of many bodies. Dokl. AN SSSR. 152 no.4: 911-914 0 '63. (MIRA 16:11.)

1. Institut fizicheskoy khimii AN SSSR. 2. Chlen-korrespondent AN SSSR (for Deryagin).

DERYAGIN, B.V.; AL'TSHULER, M.A.

On the capillary impregnation of spherical granules and diffusion extraction while in the stage of capillary impregnation. Dokl.

AN SSSR 152 no.3:651-654 S '63. (MIRA 16:12)

1. Institut fizicheskoy khimii AN SSSR. 2. Chlen-korrespondent AN SSSR (for Deryagin).

APPROVED FOR RELEASE: 03/20/2001 CIA-RDP86-00513R000101210008-8"

ALTOHULFE, M.A.; MAISKEVICH, Ye.S.; IVANIVA, Y.S.

(dasorption of dissolved substance by porous materials in the process of their hapillary imbidition. Koll. where 27 no.4848-488 Jl.-Ag '65. (MIRA 18:12)

1. Institut fizicheskoy khimii AN UkrCSR imeni Lky Pisarzhov-ckope, Klyar, Ukralisky nauchne-issledovatel'skiy i proyektnyy institut neftyency i neftekhimicheskey promyablennosti. Submitted February 27, 1764.

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S/058/61/000/001/003/008 A001/A001

Translation from: Referativnyy zhurnal, Fizika, 1961, No. 1, p. 265,#1D152

AUTHORS:

Ar'yev, A. M., Al'tshuler, M. B.

TITLE:

On the Problem of Changing the Polyethylene Structure by Plane-

Parallel Tension

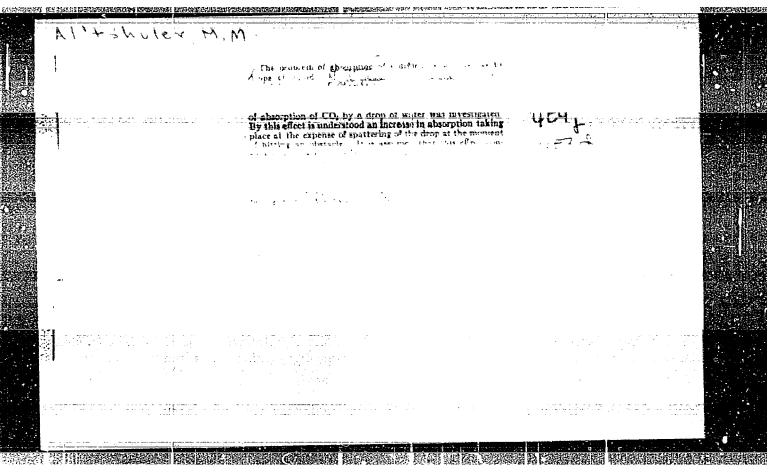
PERIODICAL:

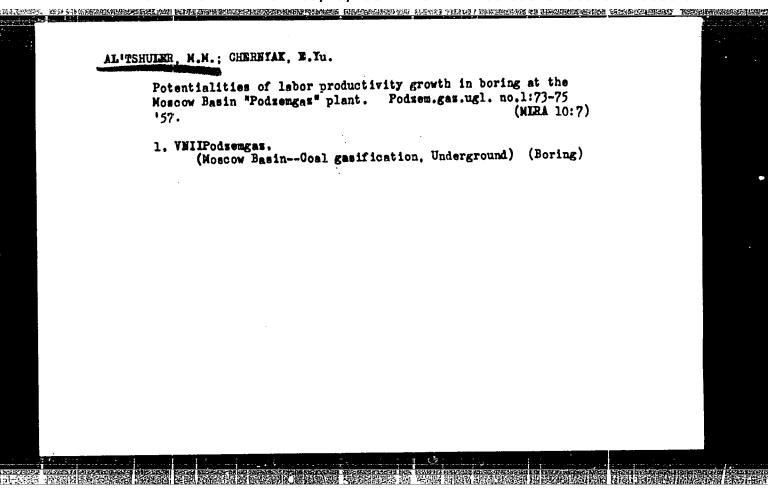
"Tr. Novocherk, politekhn, in-ta", 1959, Vol. 73. "Raboty Kafedry fiz."

pp. 173-179

TEXT: The authors plotted distribution curves of intensities, by scattering angles, for the initial polyethylene and for ethylene subjected to plane-parallel tension. For these two cases, the curves of radial distribution of atomic density are calculated. Maxima corresponding to interatomic distances and maxima of intermolecular distances were revealed in the curves. It is established that the mutual arrangement of polymer chains changes as a result of plane-parallel tension. The new arrangement of the chains is due to an increasing content of crystalline phase and the appearance of two new maxima of the distribution curve which were absent in the corresponding curve for the initial substance. Translator's note: This is the full translation of the original Russian abstract.

Card 1/1





AL'TSHULEH, M.M.; SHMAKCVA, Ye.K., kandidat ekonomicheshikh nauk.

Bifactiveness of underground coal gasification in the Moscow Basin.
Podrem.gar.ugl. no.2:105-110 '57. (MERA 10:7)

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Outlook for the development of underground gasification of coal in the Turgay Basin. Podsem.gaz.ugl. no.3:45-46 '57. (MIRA 10:11)

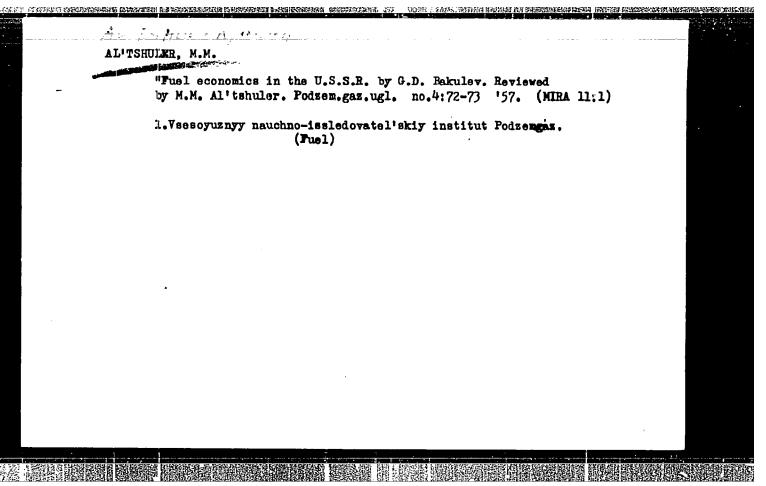
1. Vsesoyuznyy nauchno-iseledovatel'skiy i proyektnyy institut podzemnoy gasifikatsii ugley.

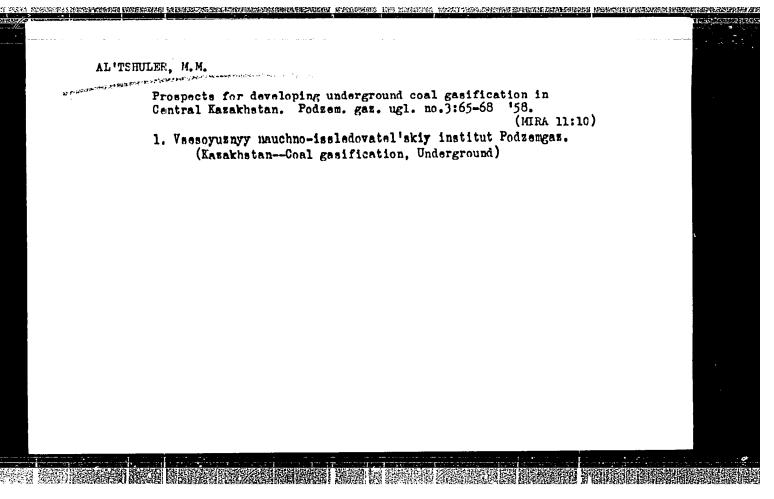
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AL'TSHULER, M.M.7 LESHCHINER, R.Ye.

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(Coal gasification, Underground) (Gas research)

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ALITSHILLER, M.M.; KAIMANOVA, Yu.D.; MIKHAYLOVA, G.N.; CHERNYAK, E.Yu.

Technical and economic analysis of the work of the underground gasification stations in 1961. Nauch. trudy VNIIPodzemgaza no.8:80-87 '62. (MIRA 16:6)

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1. Sektor tekhniko-ekonomicheskiy Vsesoyuznogo nauchnoissledovatel skogo instituta podsemnoy gazifikatsii ugley. (Coal gazification, Underground-Costs)

Analysis of the special in of working "Fridamage" plants in 1962.

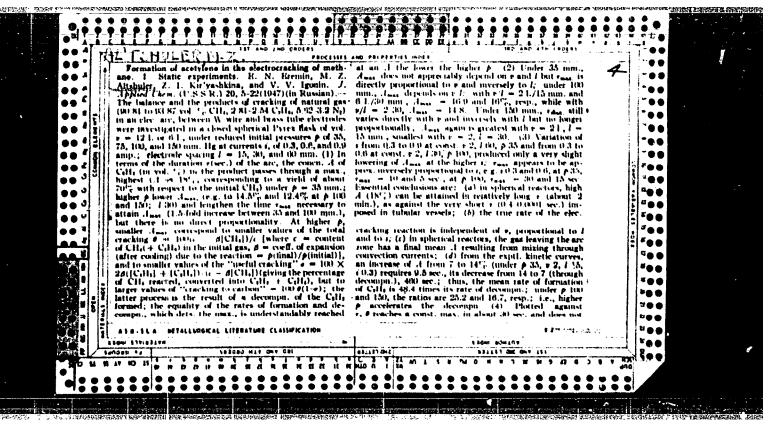
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Technical and economic analysis of operations in the "Podzemgaz" plants of Angren, Yuzhno-Abinskaya, and Lisichansk. Trudy VNNIPodzemgaza no.13:107-116 '65. (MIRA 18:8)

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5(3) SOV/20-124-3-29/67

AUTHORS: Tinyakova, Ye. I., Dolgoplosk, B. A., Corresponding Member,

Academy of Sciences, USSR, Murey, A. I., Al'tshuler, M. Z.

TITLE: The Production of Crystalline 1-4-Transpolybutadiene and

-Polyisoprene and the Investigation of Their Properties (Polucheniye kristallicheskikh 1-4-trans-polibutadiyena i

poliizoprena i izucheniye ikh svoystv)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 3, pp 595-597

(ussn)

ABSTRACT: A description is given of the production of the symmetric

1-4-transpolymers of butadiene and isoprene by the aid of oxide catalysts, in particular of chromium oxides on aluminium silicate. - Polyisoprene is stable, its infrared spec-

trum shows that 99% of the polymer chain possesses the

1-4 trans-configuration. The iodine number corresponds with the theory. Due to the uniform structure, the polymer crystallizes, which could be confirmed by the x-ray photograph. This x-ray photograph is analogous to that of natural β -gutta percha. - Polybutadiene is a crystalline-fibrous substance.

Card 1/3 As it is difficultly soluble it was pressed into a film

SOV/20-124-3-29/67 The Production of Crystalline 1-4-Transpolybutadiene and -Polyisoprene and the Investigation of Their Properties

> prior to the photographing of its infrared spectrum. The spectrum confirms the 1-4 trans-configuration. A curve of the deformation on repeated intensive heating was plotted. A table gives the density changes brought about by heating. The infrared spectrum of polyisoprene was photographed by K. V. Nel'son, and that of polybutadiene by Ye. I. Pokrovskiy, and the x-ray photographs were made by L. A. Volkova. There are 2 figures, 1 table, and 3 references, 1 of which is Soviet.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR (Institute of High Molecular Compounds of the Academy of Sciences, USSR)

Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo

kauchuka im. S. V. Lebedeva

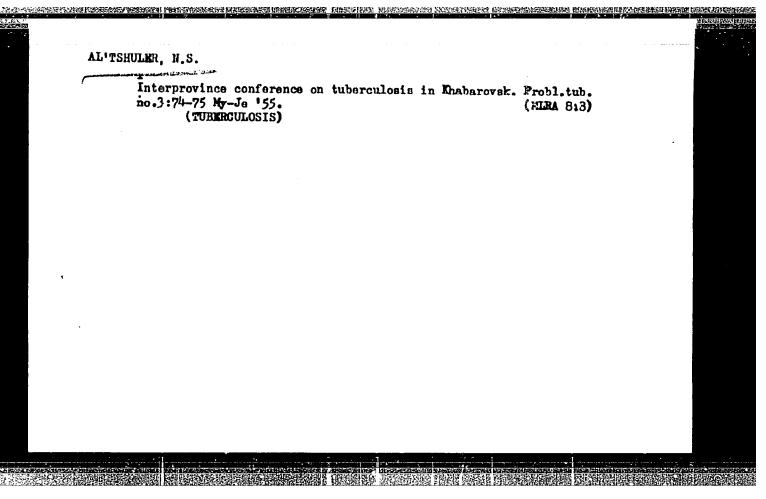
(All-Union Research Institute for Synthetic Caoutchouc

imeni S. V. Lebedev)

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EFR/EWP(j)/EPF(c)/EWT(1)/EWT(m)/BDS AFFTC/ASD/ESID-3/ PH/WW APGC Ps=4/Pc=4/Fre4 \$/0032/63/029/006/0710/0712 ACCESSION NR: AP3001528 Al'tshuler, M. Z.; Marey, A. I.; Nel'son, K. V.; Skripova, L. TITLE: Study of thermal structuration in insoluble polymers by quantitative infrared analysis a SOURCE: Zavodskaya laboratoriya, v. 29, no. 6, 1963, 710-712 TOPIC TAGS: thermal structuration, insoluble polymer, infrared analysis, thermovulcanization, divinyl rubber, potassium bromide ABSTRACT: An earlier development, the so-called "powder-state method," was used for qualitative determination of the microstructure of insoluble samples of polybutadienes. b Soluble samples of rubbers, the structure of which was determined by infrared spectroscopy of their solutions, served as standards. Divinyl rubber samples of 0.005 gm were subjected to pressure trituration with 2 gm of potassium bramide, which served as an abrasive. This was facilitated by the addition of some carbon tetrachloride, lowering the elasticity of the insoluble polymers. The infrared spectra of the thus treated SKB rubber before and after 4 hours heating at 250 and 2800 showed that at 2500 there takes place a break of double bonds in the 1,2 position, while those in trans-position remain unaffected.

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inside double A study of the increase in to considerably of there also tal	bonds are ru thermovulca emperature andue to their kes place a b	lcanization tempera ptured, with a sim- nization of cis-1,4 d heat duration the rupture and transforeak in the few doc- conference on spec	ultaneous incr 4-divinyl rubb e number of ci- ormation into uble bonds in	ease in CH sub a showed that we sell that we sell that we sell the transform. The position 1,2	groups. rith an reases Besides, 2. The	
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ASEYEV, D.D., professor; BERLIN, I.I., professor; VOZNESENSKIY, A.N., professor; SOROKIN, I.E., professor; UGRYUMOV, B.P., professor; T(PCHAN, A.B., professor; AGAPKIN, I.N., kandidat meditsinskikh nauk; AGRACHEV, G.I., kandidat meditsinskikh nauk; AL'TSHULER, N.S., kandidat meditsinskikh nauk; BERENZON, Ya.Ye., kandidat meditsinskikh nauk; KOROVINA, Yu.P., kandidat meditsinskikh nauk; KOSITSKIY, G.I., kandidat meditsinskikh nauk; MANDEL'SHTAM, F.M., kandidat meditsinskikh nauk; OHLOGINA, Ye.Ya., kandidat meditsinskikh nauk; PATSKHVEROVA, A.G., kandidat meditsinskikh nauk; POKOTILOV, K.Ye., kandidat meditsinskikh nauk; ROZANOVA, M.D., kandidat meditsinskikh nauk; SAKHAROV, A.N., kandidat meditsinskikh nauk; YASHCHENKO, T.N., kandidat meditsinskikh nauk

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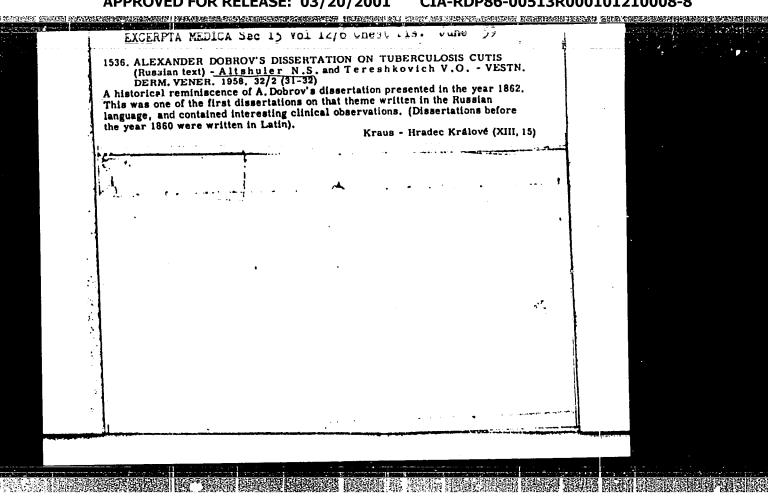
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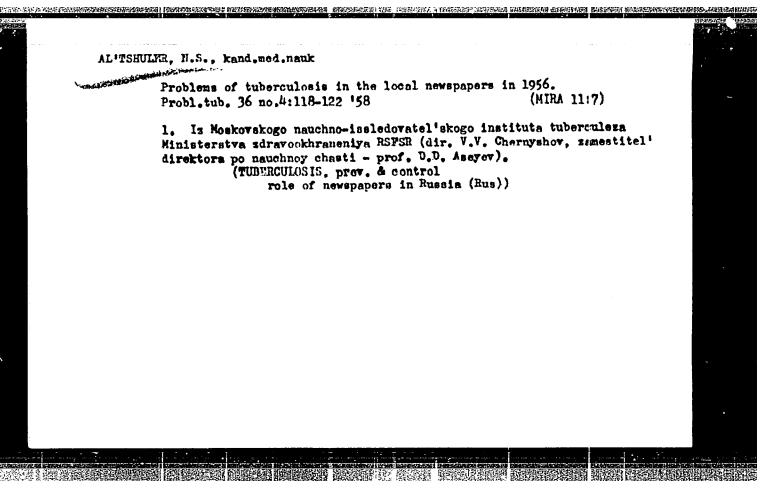
AL'TSHULER, N.S., kand.med.nauk; MARGULIS, N.Yu., nauchnyy sotrudnik

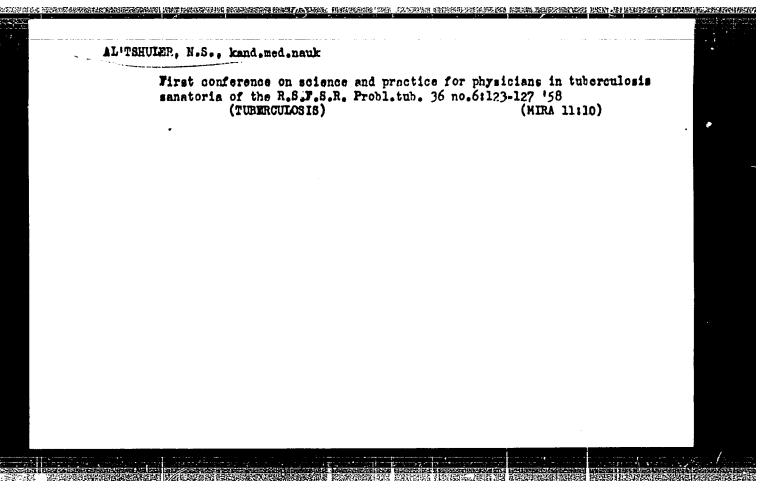
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(MEDICINE-STUDY AND TEACHING)







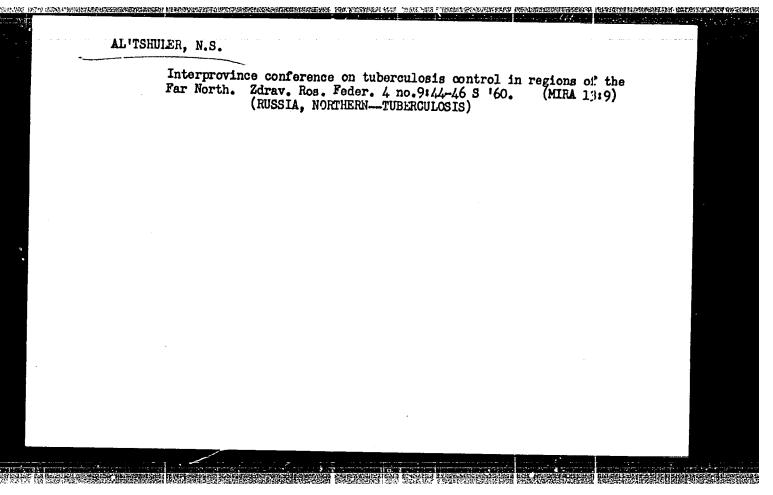
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Experience with a total examination of the population of the city of Klin. Probletub. 38 no.8:16-23 160. (MIRA 14:1)

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1. Iz Moskovskogo nauchno-issledovatel skogo instituta tuberkuleza (dir. V.F. Chernyshev, sam. dir. po nauchnoy chasti prof. D.D. Aseyev).

(KLIN-TUBERCULOSIS-DIAGNOSIS)

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3-8 S '61. (MIFA 14:10)

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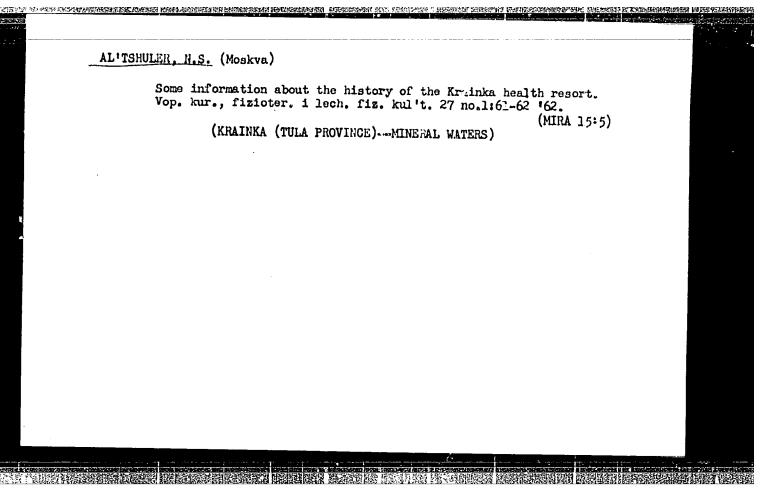
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